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| REPORT DOCUMENTATION PAGE | | <i>Form Approved</i> OMB No. 0704-0188 | |
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| 1. REPORT DATE (DD-MM-YYYY) 17 Nov 2011 | | 2. REPORT TYPE FINAL | |
| 4. TITLE AND SUBTITLE Couple Functioning and Posttraumatic Stress in OIF/OEF Veterans and Spouses | | 3. DATES COVERED (From - To) 1 May 2010 - 30 Sep 2011 | |
| | | 5a. CONTRACT NUMBER N/A | |
| | | 5b. GRANT NUMBER HU0001-10-1-TS03 | |
| 6. AUTHOR(S) Melvin, Kristal C., PhD, RN, LTC, AN, USA | | 5c. PROGRAM ELEMENT NUMBER N/A | |
| | | 5d. PROJECT NUMBER N10-009 | |
| | | 5e. TASK NUMBER N/A | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Johns Hopkins University School of Nursing 525 N. Wolfe St. Baltimore, MD 21202 | | 5f. WORK UNIT NUMBER N/A | |
| | | 8. PERFORMING ORGANIZATION REPORT NUMBER N/A | |
| | | 9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) TriService Nursing Research Program, 4301 Jones Bridge RD Bethesda, MD 20814 | |
| 10. SPONSOR/MONITOR'S ACRONYM(S) TSNRP | | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) N10-009 | |
| | | | |
| 12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited | | | |
| 13. SUPPLEMENTARY NOTES N/A | | | |

14. ABSTRACT

Purpose: To (a) understand and explain how posttraumatic stress symptoms (PTSS) affect couple functioning in Army soldiers returning from combat, and their spouses/partners, (b) test the moderating effects of age, gender, rank, resilience, coercion in the relationship and previous history of trauma on the relationship between PTSS and couple functioning, (c) examine the prevalence of secondary traumatic stress (STS) in civilian spouses, (d) analyze whether the relationships between PTSS and couple functioning differ for male versus female soldiers and their spouses/partners, and (e) explore experiences of couples with high levels of couple functioning in spite of clinically significant levels of PTSS in one or both partners. **Design:** A cross-sectional descriptive sequential mixed-methods design was employed for this dyadic study. The Couple Adaptation to Traumatic Stress (CATS) model (Nelson-Goff & Smith, 2005) was used to guide this study. The CATS model is a framework designed to explain the interactive processes of a couple adapting to traumatic experiences. **Methods:** Mailed surveys on PTSS and couple functioning were sent separately to interested couples, along with optional written consent forms for further contact for the purpose of in-depth interviews. **Sample:** Data were collected among male ($n = 43$), and dual (both spouses served in the armed forces) ($n = 30$) Army couples. From this total sample ($N = 73$ couples), using a maximum variation purposive sampling design, 14 consenting couples were then selected for in-depth semi-structured interviews. The interview couples were further stratified based on their couple functioning scores, and the five highest functioning couples with clinically significant levels of PTSS were selected for a multiple case study analysis. **Analysis:** Quantitative data were analyzed using a generalized linear model controlling for interdependence of couple dyads. Qualitative data were analyzed using a multiple case study approach. **Findings:** In 24% of the couples ($n = 17$), both members had PTSS above the clinical cut-off for suspected Posttraumatic Stress Disorder (PTSD). In an additional 48% ($n = 35$), one member of the couple had a high level of PTSS. Major findings were (a) higher post-traumatic stress was associated with more marital difficulties and lower resilience and (b) despite high levels of post-traumatic stress, some couples employ a variety of creative strategies for maintain good marital quality. Although female gender, low resilience and high coercion were significant predictors of lower couple functioning, none of the hypothesized moderators of the relationship between PTSS and couple functioning (age, gender, rank, resilience, coercion and trauma history) were statistically significant. No differences in couple functioning, resilience, PTSS or abuse were found between male and dual military couples. Case study participant couples ($n = 5$ couples) provided a rich description of the best practices of strong, resilient Army couples during reintegration.

15. SUBJECT TERMS

posttraumatic stress symptoms, military couples functioning, resilience, spousal abuse, reintegration

16. SECURITY CLASSIFICATION OF:

a. REPORT
UNCLASSIFIED

b. ABSTRACT
UNCLASSIFIED

c. THIS PAGE
UNCLASSIFIED

**17. LIMITATION
OF ABSTRACT**

UU

**18. NUMBER
OF PAGES**

23

19a. NAME OF RESPONSIBLE PERSON
Debra Esty

19b. TELEPHONE NUMBER (include area
code)
301-319-0596

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

TriService Nursing Research Program Final Report Cover Page

Sponsoring Institution

TriService Nursing Research Program

Address of Sponsoring Institution

4301 Jones Bridge Road
Bethesda MD 20814

USU Grant Number HU0001-10-1-TS03

USU Project Number N10-009

Title of Research Study: Couple Functioning and Posttraumatic Stress in OIF/OEF Veterans and Spouses

Period of Award 1 May 2010-30 Sep 2011

Applicant Organization: Johns Hopkins University, School of Nursing

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Abstract

Purpose: To (a) understand and explain how posttraumatic stress symptoms (PTSS) affect couple functioning in Army soldiers returning from combat, and their spouses/partners, (b) test the moderating effects of age, gender, rank, resilience, coercion in the relationship and previous history of trauma on the relationship between PTSS and couple functioning, (c) examine the prevalence of secondary traumatic stress (STS) in civilian spouses, (d) analyze whether the relationships between PTSS and couple functioning differ for male versus female soldiers and their spouses/partners, and (e) explore experiences of couples with high levels of couple functioning in spite of clinically significant levels of PTSS in one or both partners.

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Methods: Mailed surveys on PTSS and couple functioning were sent separately to interested couples, along with optional written consent forms for further contact for the purpose of in-depth interviews.

Sample: Data were collected among male ($n = 43$), and dual (both spouses served in the armed forces) ($n = 30$) Army couples. From this total sample ($N = 73$ couples), using a maximum variation purposive sampling design, 14 consenting couples were then selected for in-depth semi-structured interviews. The interview couples were further stratified based on their couple functioning scores, and the five highest functioning couples with clinically significant levels of PTSS were selected for a multiple case study analysis.

Analysis: Quantitative data were analyzed using a generalized linear model controlling for interdependence of couple dyads. Qualitative data were analyzed using a multiple case study approach.

Findings: In 24% of the couples ($n = 17$), both members had PTSS above the clinical cut-off for suspected Posttraumatic Stress Disorder (PTSD). In an additional 48% ($n = 35$), one member of the couple had a high level of PTSS. Major findings were (a) higher post-traumatic stress was associated with more marital difficulties and lower resilience and (b) despite high levels of post-traumatic stress, some couples employ a variety of creative strategies for maintain good marital quality. Although female gender, low resilience and high coercion were significant predictors of lower couple functioning, none of the hypothesized moderators of the relationship between PTSS and couple functioning (age, gender, rank, resilience, coercion and trauma history) were statistically significant. No differences in couple functioning, resilience, PTSS or abuse were found between male and dual military couples. Case study participant couples ($n = 5$ couples) provided a rich description of the best practices of strong, resilient Army couples during

reintegration.

Implications for Military Nursing: These findings could be instrumental in the development of interventions designed to mitigate, or even prevent, negative outcomes such as divorce, violence and suicide for military couples facing combat deployment.

TSNRP Research Priorities that Study or Project Addresses**Primary Priority**

| | |
|------------------------------------|---|
| Force Health Protection: | <input checked="" type="checkbox"/> Fit and ready force <input checked="" type="checkbox"/> Deploy with and care for the warrior <input checked="" type="checkbox"/> Care for all entrusted to our care |
| Nursing Competencies and Practice: | <input type="checkbox"/> Patient outcomes <input type="checkbox"/> Quality and safety <input type="checkbox"/> Translate research into practice/evidence-based practice <input type="checkbox"/> Clinical excellence <input type="checkbox"/> Knowledge management <input type="checkbox"/> Education and training |
| Leadership, Ethics, and Mentoring: | <input type="checkbox"/> Health policy <input type="checkbox"/> Recruitment and retention <input type="checkbox"/> Preparing tomorrow's leaders <input type="checkbox"/> Care of the caregiver |
| Other: (specify) | <input type="checkbox"/> |

Progress toward Achievement of Specific Aims of the Study or Project

Findings related to each specific aim, research or study questions, and/or hypothesis:

The specific aims for this dissertation study were:

Aim 1: Examine the relationships between posttraumatic stress symptoms (PTSS) and couple functioning (i.e. couple satisfaction, communication, and conflict) in Army soldiers and their spouses.

Aim 2: Test the moderating effects of age, gender, rank, resilience, coercion or violence in the marriage and previous history of trauma on the relationship between PTSS and couple functioning.

Aim 3: Examine the prevalence of secondary traumatic stress (STS) in civilian spouses.

Aim 4: Conduct a preliminary comparison of couple functioning and PTSS in male versus female soldiers and male versus dual military couples.

Aim 5: Interview couples with high levels of PTSS (soldier or spouse) and high couple functioning, eliciting reintegration experiences. The purpose of this qualitative aim is to understand how some couples with PTSS are able to function well, in order to inform future interventions for improving couple functioning in military couples.

Relationship of PTSS on Couple Functioning (Aim 1)

To investigate the first hypothesis, that couple functioning would be negatively affected by PTSS in both members of the couple, PCL scores were regressed on couple adjustment (RDAS) scores while controlling for couple effects using a general linear mixed model. This analysis is similar to a linear regression model, but accounts for interdependence of couple measures. The level of PTSS was a significant predictor of couple functioning such that higher scores on the PCL were predictive of lower scores on the RDAS ($z = -2.82$, 95 % CI(-.169,-.029), $p = .005$). This finding supports the first hypothesis.

Moderators of the Relationship between PTSS and Couple Functioning (Aim 2)

Hypothesis 2, that the relationship between PTSS and couple functioning would be increased in magnitude by younger age, female gender, lower rank, lower levels of resilience, increased levels of trauma exposure, and the report of coercion or violence between the spouses, was investigated using a general linear mixed model. Backward stepwise selection was used, retaining only those variables with statistically significant effects. Resilience remained significant after controlling for couple effects ($z = 2.9$, $p = .004$), with resilience acting inversely on the relationship; individuals with high resilience (CD-RISC) scores were less likely to have low couple functioning (RDAS) scores, regardless of PTSS (PCL) scores. Gender was also significant after controlling for couple effects ($p = .021$), such that males with high PTSS scores were likely to have lower couple functioning scores than females with the same PTSS score. Coercion and violence (WEB) remained significant ($p = .001$) and acted to increase the statistical relationship between PTSS and couple functioning, so that individuals reporting higher levels of violence and coercion reported lower couple functioning scores.

The next step in our analysis was to test for moderation by examining the statistical interaction of each proposed moderator with PTSS score and couple functioning. Interaction effects failed to reach statistical significance for any of the proposed moderators, indicating that none of these predictors acted

to change the slope of the regression line of PTSS on couple functioning. These analyses therefore failed to support hypothesis 2.

Prevalence of Secondary Traumatic Stress (STS) (Aim 3)

We also investigated the presence and prevalence of STS in non-deploying spouses, with STS defined as an elevated PCL score in the absence of a history of trauma exposure. This analysis was limited to the 39 female civilian spouses, because only two males in this sample had not deployed to either OIF or OEF. To determine whether symptoms endorsed on the PCL were attributable to STS or could be primary PTSS, we used a two-step analysis process. First, we determined the prevalence of PTSS symptoms above the cut point of 30 on the PCL, then we controlled for the presence of trauma history in the female spouses themselves. The prevalence of STS in the non-deployed female spouses in this study was 34 %. That is, 16 of the 47 female spouses who had never deployed reported PCL scores above 30. However, when presence of previous trauma history, as reported on the TEQ, was entered into the analysis, the prevalence of STS in the female spouses in this study was reduced to 2 % ($n = 1$). All other female, non-soldier spouses with PCL scores above the cut-point reported previous traumas that could have accounted for their elevated PCL scores.

Comparisons of Male Military and Dual Military Couples (Aim 4)

The data were examined in several ways to determine whether couple functioning differed between male military and dual military couples. First, the data were explored for gender differences by individual respondents as previously discussed, and displayed on Table 1. Because this initial analysis did not address the presence or absence of clinical levels of distress, all respondents were then sorted into high or low scores for couple functioning, resilience and PTSS, based on the clinical cut points previously referenced. In order to examine the couples as dyadic units, respondent couples were then sorted into groups based on their scores. Two couple adjustment groups were created: (a) both male and female having high couple adjustment (RDAS scores) and (b) at least one spouse reporting low couple adjustment (RDAS score < 48). Similarly, couple groups were created for high and low levels of coercion, using WEB scores > 20 in one or more spouses to delineate the abused versus non-abused groups and for PTSS, using PCL scores > 30 (see Table 2). Chi-square analysis was used to examine group membership relationships and the results showed there were no significant differences between male and dual military couples on the likelihood of reporting lower couple functioning, higher coercion, or higher PTSS.

The fact that 25.8% of couples admitted to abuse in at least one partner deserves mention here. Although not the focus of this study, an exploration of the gender of abused respondents and comparison to levels of PTSS is presented in Table 3. With 5 couples reporting a male victim of abuse, 9 reporting the female as victim and 3 couples with both spouses reporting abuse, these data suggest that there may be very high rates of coercive and violent experiences in married military couples.

Table 1
Comparison of Study Variables by Gender of Individual Participant

| Variable | Gender | | | | Statistic | <i>p</i> -value |
|-------------------------------|------------------------|------|--------------------------|------|-----------|-----------------|
| | Males (<i>n</i> = 66) | | Females (<i>n</i> = 66) | | | |
| | M | SD | M | SD | | |
| RDAS couple functioning score | 48.9 | 6.7 | 50.9 | 6.9 | -1.47 | .14 |
| R-CD-RISC resilience score | 30.8 | 6.7 | 30.6 | 6.4 | 0.15 | .88 |
| PCL posttraumatic symptoms | 37.6 | 16.9 | 30.3 | 15.1 | 2.68 | .008* |
| WEB violence and coercion | 13.5 | 6.5 | 15.5 | 8.3 | -0.84 | .40 |
| TEQ trauma exposure history | 9.9 | 5.9 | 6.6 | 6.0 | 3.33 | .0001* |
| Deployed participants | Males (<i>n</i> = 64) | | Females (<i>n</i> = 20) | | | |
| Total deployments | 1.6 | 1.0 | 0.39 | 0.7 | 9.54 | < .0001* |
| Total months deployed | 18.3 | 1.0 | 12.7 | 1.3 | 9.67 | < .0001* |
| Months since last deployed | 34.6 | 3.1 | 51.2 | 6.4 | 1.05 | .017* |

Note. M = Mean, SD = Standard Deviation. Statistic = test statistic, independent sample t test used, Variables: RDAS = Revised Dyadic Adjustment Scale (Heyman et al., 1994), R-CD-RISC = Revised Connor-Davidson Resilience Scale, PCL = PTSD Checklist (Weathers et al., 1993), WEB = Women's Experience of Battery, gender neutral version (Smith et al., 1995), TEQ = Traumatic Experience Questionnaire (Vrana & Lauterbach, 1994b).

* $p < .05$

Table 2

Study Measure Comparisons by Male or Dual Military Couple

| Couple Groups, by distress cut points | Male (<i>n</i> = 39) | | Dual (<i>n</i> = 27) | | Totals (<i>N</i> = 66) | |
|---------------------------------------|-------------------------------|------|--------------------------|------|----------------------------|------|
| Low couple functioning (<48 on RDAS) | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % |
| Male and female both high | 19 | 48.7 | 12 | 44.4 | 31 | 47.0 |
| At least one spouse low | 20 | 51.3 | 15 | 55.5 | 35 | 53.0 |
| | $\chi^2 = 0.06 \quad p = .81$ | | | | | |
| High coercion ("abused") (>20 on WEB) | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % |
| Male and female both negative | 28 | 71.8 | 21 | 77.8 | 49 | 74.2 |
| At least one spouse abused | 11 | 28.2 | 6 | 22.2 | 17 | 25.8 |
| | $\chi^2 = 0.24 \quad p = .62$ | | | | | |
| High PTSS (>30 on PCL) | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % |
| Male and female both negative | 10 | 25.6 | 10 | 37.0 | 20 | 30.3 |
| At least one spouse positive | 29 | 74.4 | 17 | 58.7 | 46 | 69.7 |
| | $\chi^2 = 0.98 \quad p = .32$ | | | | | |

Note. RDAS = Revised Dyadic Adjustment Scale (Busby et al., 1995), WEB = Women's Experience of Battery scale, gender neutral version (Houry et al., 2008a), PCL = Posttraumatic Stress Disorder Checklist (Weathers et al., 1993).

Table 2-A
Abuse Reports by Gender of Abused Spouse

| Abuse | <i>N</i> | % |
|---------------|----------|-------|
| No abuse | 63 | 78.75 |
| Male abused | 5 | 6.25 |
| Female abused | 9 | 11.25 |
| Both abused | 3 | 3.75 |

Table 3-B
Posttraumatic Stress Symptom (PTSS) Couple Groups by Gender of Abused Spouse

| Abuse | PTSS Couple Groups | | | | Total <i>N</i> = 72 |
|---------------|-----------------------------------|----------------------------------|-----------------------------------|------------------------------------|------------------------|
| | “Non-distressed” <i>n</i> = 20 | “Male distress” <i>n</i> = 26 | “Female distress” <i>n</i> = 9 | “Couple distress” <i>n</i> = 17 | |
| No abuse | 18 | 20 | 8 | 9 | 55 |
| Male abused | 1 | 2 | 0 | 2 | 5 |
| Female abused | 1 | 4 | 1 | 3 | 9 |
| Both abused | 0 | 0 | 0 | 3 | 3 |

Note. PTSS = Posttraumatic stress symptoms, “Non-distressed” = both spouses score < 30 on PTSD checklist (PCL), “Male distress” = male spouse > 30 on PCL, “Female distress” = female spouse > 30 on PCL, “Couple distress” = both spouses > 30 on PCL; Abuse = Women’s Experience of Battery (WEB) score > 20
 Pearson $\chi^2(9) = 14.37$ $Pr = 0.11$

Experiences of couples with high levels of couple functioning (Aim 5)

The findings of the multiple case analysis of high functioning Army couples during the process of reintegration after combat deployment, was called rekindling marriage, when successful. The reintegration process works very well when supported by selected resources, labeled support, and when strategies are demonstrated at the individual, family and couple levels. Characteristics and behaviors that support all 3 types of strategies were discovered in these dyadic data.

Summary of Couple-related Findings for Aim 5:

1. Experiences of post-deployment reintegration were described as Rekindling Marriage.
2. Strategies couples use to rekindle marriage:
 - Go with the flow- flexibility of roles
 - Full effort- working on relationship
 - Best friends- caring and affectionate attitudes
 - Trust - trusting spouse and behaving in a trustworthy manner
 - Talk it through- ways to effectively communicate and work through conflict

Relationship of current findings to previous findings:

PTSS and Couple Functioning (Aim 1)

The results of this study support recent findings of a military couples study (Allen et al., 2010) and studies of soldiers or spouses separately (Nelson Goff et al., 2007; Hamilton et al., 2009) showing that individuals with higher post traumatic stress symptoms (PTSS) experience lower couple functioning. Although these findings are not new, the current study is the first to control for interdependence of spouses, in a dyadic analysis. This finding helps to expand the understanding of the scope of the problem, in that the small to moderate effect size in this study ($- .20$), was robust given the relatively small sample of Army couples.

Potential Moderators of PTSS/Couple Functioning Relationship (Aim 2)

Another term for moderation is interaction effect, defined as “one in which the effect of one variable depends on the level of the other variable” (Rosner, 2006). In other words, there is a difference in the variation, depending on the value of the moderating variable (Baron & Kenny, 1986; Kenny, 2009). None of the proposed moderators (age, gender, rank, resilience, coercion in the marriage and history of previous trauma) were statistically significant moderators of the relationship between PTSS and couple functioning. Gender, resilience and coercion in the marriage all were statistically significant independent predictors of couple functioning, and may have acted to confound the relationship that PTSS exerted. For example, participants with higher resilience were more likely to have higher couple functioning, regardless of PTSS level, while the opposite was true for females and participants reporting high levels of coercion in their marriage. Confounding variables are defined as those variables that are associated with

both the independent and dependent variable, which must be controlled in most cases, before examining the relationships between other variables (Rosner, 2006). Variables which have the potential for confounding in this study (gender, resilience and coercion in the marriage) should be measured and accounted for in future research to prevent erroneous findings.

If temporality of variables could be determined, as with longitudinal data, resilience or coercion in the marriage could be examined as potential mediators between PTSS and couple functioning. Mediator variables are defined as variables that occur between the predictor variable and the outcome variable on a causal pathway, and alter the outcome in a statistically significant manner (Baron & Kenny, 1986; Kenny, 2009). Female gender could not be a mediator, since biological sex is determined prior to birth, and gender reassignment is not common. With cross-sectional data, as in this study, temporality of resilience and coercion in the marriage cannot be established, so the differences in couple functioning associated with these variables must be labeled “confounders”.

It is also possible that the predictor variables which acted as confounders in this sample may demonstrate significant moderation effects in future studies, given a larger sample size. With a larger sample, there is more power to detect smaller effect sizes, and to detect influences from multiple variables. Power calculations were based on only the major predictor (PTSS) and outcome variable (RDAS score) in this study, and may not have provided enough power for multiple moderation testing.

Prevalence of secondary traumatic stress in civilian spouses (Aim 3)

We investigated the prevalence of STS in non-deploying spouses, with STS defined as a PCL score above the clinical cut-off, in the absence of a history of trauma exposure. This analysis was limited to the 39 female civilian spouses, because only two males in this sample had not deployed to either OIF or OEF. When presence of previous trauma history, as reported on the TEQ, was entered into the analysis, the prevalence of STS in the female spouses in this study was reduced from 34% to 2 % ($n = 1$). All other female, non-soldier spouses with PCL scores above the cut-point reported previous traumas that could have accounted for their elevated PCL scores. Findings from this study raise doubt regarding the presence of secondary traumatic stress in military spouses, because its prevalence was extremely low in this sample. This low rate suggests that STS may be over-estimated in previous studies, due to omitting measurement of primary trauma in the spouses. Future studies investigating STS should measure trauma history in order to obtain more accurate estimates of prevalence, and for better understanding of risks to participants, through potential retriggering of prior trauma in research participants. Including more civilian male spouses in future studies should be a goal of this field of research as well, in order to determine if there are differences in their experiences.

Gender comparisons and male versus dual military couples (Aim 4)

This study provides evidence supporting PTSS having a similar effect on the couple functioning in both male and dual military couples who have deployed. Because previous studies have included few, if any, female soldiers or dual military couples, it is important for the development of any future interventions to investigate the potential for differences in couple functioning of female soldier and dual military couples. Although there were not enough female soldiers partnered to male civilian spouses to make comparisons to female civilian spouses possible, this study does provide a preliminary investigation of male versus dual military couples. This contribution to the literature is important, since we were unable to find any previous studies that included dual military couples, despite the fact that most married female soldiers are in dual military marriages. According to Department of the Army statistics, 48% of female soldiers on active duty are married, and 40% of those are married to male service members (Defense Manpower Data Center, 2009). In comparison, 60% of male soldiers are married, but only 5% are married to female soldiers (Defense Manpower Data Center, 2009). This underscores the challenge of recruiting couples comprised of female soldiers married to civilians and explains the low number ($n = 2$) represented in this sample.

No significant differences were found in the relationship between PTSS and couple functioning between male versus dual military groups, perhaps because all male soldiers, in both groups, had deployed at least once. This deployment experience provided decreased variability across groups in this sample.

Reintegration Experiences of High Functioning Couples with PTSS (Aim 5)

The findings of the mixed methods multiple case study portion of the dissertation contribute to a deeper understanding to the process of successful reintegration after combat deployment. The reintegration process worked very well when supported by selected resources, labeled support, and when strategies are demonstrated at the individual, family and couple levels.

Characteristics of successful Army couples are similar to those of civilian couples in many ways, as described in research literature (Gottman & Notarius, 2002; Gottman, 2011). Most notably, Army and civilian couples both (a) value good communication, even when disagreements occur, (b) describe a shared sense of purpose, with goals and values in common and a strong friendship with each other, and (c) are flexible with traditionally gendered roles and power sharing in the marriage.

Military couples are typically different from civilian couples in several important ways; (a) they expect long separations, as part of the military lifestyle (Bonds et al., 2010; Lyons, 2007), (b) there is a sense of risk and danger around the separations for combat deployment (Atkinson et al., 2009; Frapell-Cooke, Gulina, Green, Hacker Hughes, & Greenberg, 2010; Hoge et al., 2004; MacGregor et al., 2009; Maguen et al., 2008), and (c) deploying soldiers are at increased risk of exposure to trauma, both physical and psychological (Gewirtz, Polusny, DeGarmo, Khaylis, & Erbes, 2010; LeardMann et al., 2009; Phillips et al., 2010). These differences make couple resilience even more important in these couples than in most civilian couples. There may be parallels to police and firefighter couples, in that the presence of danger is a constant part of those professions as well, but long separations are not usually part of the jobs of police or firefighters. The very nature of the military lifestyle and the planned deployment separations creates the opportunity for preventive interventions prior to and during deployment, which could help to smooth the reintegration process.

Effect of problems or obstacles on the results:

Recruitment was higher and more efficient, e.g. higher percent of eligible couples and more couples choosing to participate, than expected. This, while not a problem, was an issue that required IRB approval. The change request was submitted in late October 2010, while the approval was not received until early January 2011. This delayed some of the analyses, but did not significantly change the course of the research study. Increased enrollment improved the quality of the data and increased the ability to detect differences.

Limitations: Limitations of this study are primarily related to the decreased generalizability of the findings, due to the non-representative sample. While the composition of the Army includes less than 65% Caucasians, this sample is over 89% Caucasian non-Hispanic. In an attempt to address this disparity of representation, minority veteran organizations, such as the Hispanic Veterans Organization and the National Association of Black Veterans, were contacted and asked to review recruitment materials and support recruitment. Although several of these organizations did put out an announcement to their members, no additional couples were recruited through these organizations.

Statistics are not available for the numbers of cohabitating couples in either heterosexual or homosexual relationships, but there are likely many more of both than are represented in this sample. Recruitment through social media, such as Facebook, and Army post newspapers did attract a total of 11

cohabiting couples, three of whom requested survey packets after initial screening. However, only one of these couples returned both member's surveys. A concern about stigma or loss of privacy in cohabiting couples, compared to married couples, may have led to a lower response rate in this population.

Although the non-representative sample in this study does not allow generalizations to the larger Army, the approach used for this study provides a more in-depth understanding of the effects of PTSS on couple functioning, and the reintegration process for high functioning married Caucasian Army couples. Use of a mixed methods approach provides some protection against the mono-method bias that plagues many studies that collect only likert-type survey data, while simultaneously providing a broader picture than that obtained through qualitative data collection alone (Creswell & Plano Clark, 2007).

The use of both quantitative and qualitative data also improves the rigor of this study, by providing a richer, deeper understanding of these couples. For instance, had we been restricted to the survey data, we would never have known that Sarah suffers symptoms from her TBI that impact her marriage. Because these symptoms do not fit the PTSS measure we used, the PCL, her symptoms went unreported in the quantitative data. In addition, the quantitative data helped us to select participants and allowed for comparisons across cases by trauma exposures and levels of PTSS.

All data in this study are cross-sectional, precluding the possibility of inferences about causal relationships. For instance, female civilians with high PTSS may have developed symptoms as a result of their soldier spouse's PTSS, or may have already had high PTSS from other causes, such as child abuse or intimate partner violence.

Conclusion:

While investigation of combat-related PTSS in soldiers has received a great deal of attention in the past decade, research into the affect on spouses and the couple relationship has been sparse. Of the few studies, most have investigated soldiers or spouses separately (Nelson Goff et al., 2007; Nelson Goff et al., 2009; Renshaw et al., 2008), with very few investigations of both spouses at the same time (Allen et al., 2010; Basham, 2008; Nelson-Goff et al., 2006). The inclusion of both spouses in the research study described above allows for a richer, fuller understanding of the couple, in the context of PTSS. This study is also the first to control for interdependence of spouses in a dyadic analysis, which adds confidence to the findings.

Significance of Study or Project Results to Military Nursing

There are implications from this study for military clinicians and researchers, such as potential changes to treatment practices and research agendas in the short term, and to Army and Department of Defense policy in the long term.

Nurses, physicians, counselors and other healthcare professionals should take note of the significant relationship between PTSS and couple functioning, in both soldiers and civilian spouses. Screening for PTSS should be a part of every routine medical visit, perhaps with a short questionnaire, such as the primary care screening tools proposed by several researchers (Bliese, Wright, Adler, Castro, & Hoge, 2008; Gore, Engel, Freed, Xian, & Armstrong, 2008). This is particularly true for mental health related visits and when the chief complaint could be a somatic expression of underlying PTSS or other mental distress (Eaton et al., 2008; Hoge et al., 2007; SteelFischer et al., 2009). In addition, clinical interventions that aim to increase resilience may be the best investment of time and energy for the short

term, with program evaluation of existing and new interventions at the earliest possible time. In addition, all 5 couples in the case study portion of this study supported the utility of individual soldier counseling for combat-related PTSS to assist Army couples with the reintegration process.

Female gender and coercion in the marital relationship predicted lower couple functioning, while resilience predicted higher couple functioning. Although these predictors did not meet the criteria for statistical significance as moderators in this sample, it is important to control for these factors and to include them in future model testing. It is possible that one or more of these variables could be acting as either a mediator or a moderator of the relationship between PTSS and couple functioning. Larger sample studies with more than one collection time would be important strategies to investigate temporal relationships between these variables.

While the high prevalence of previous trauma and PTSS in this sample may not be generalizable to all military couples, it is important to note that the couples in this study have all been able to stay together and cope with the strains on their marriage, at least to date. Couples such as these have much to teach us about behaviors and support that have assisted them to remain successful. We still know surprisingly little about how resilience can be nurtured and developed, and this study offers some insights into behaviors, programs and attitudes that military couples with high couple functioning describe as most helpful.

Another important direction for future research would be to investigate the children of high functioning military couples, in terms of resilience, PTSS and academic performance. These investigations could inform the development of interventions designed to support the entire military family.

Changes in Clinical Practice, Leadership, Management, Education, Policy, and/or Military Doctrine that Resulted from Study or Project

No actual changes have been implemented related to this research yet.

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Summary of Dissemination

| Type of Dissemination | Citation | Date and Source of Approval for Public Release |
|------------------------------|--|---|
| Publications in Press | Melvin, K.C., Gross, D., Hayat, M.J., Jennings, B.M. & Campbell, J.C. (in press). Couple Functioning and Posttraumatic Stress Symptoms in US Army Couples: The Role of Resilience. Research in Nursing and Health. | 15 April 2011, TSNRP (COL DeJong) <i>Note:</i> I have also applied for PAO clearance through MAMC Stratcom, since I am currently assigned to CNSCI there. |
| Podium Presentations | Melvin, K.C. (September 2011). Strong army couples: A multiple case study in posttraumatic resilience. Podium presentation at the 16 th International Conference on Violence, Abuse, and Trauma, San Diego, CA. | 30 April 2011, TSNRP (COL DeJong) |
| Poster Presentations | Melvin, K.C., Gross, D., Hayat, M.J., Wenzel, J. & Campbell, J.C. (February 2011). Couple Functioning and Posttraumatic Stress in Army Combat Veterans and Spouses. Poster presentation at Southern Nursing Research Society (SNRS) conference, Jacksonville, FL. Melvin, K.C., Gross, D., Campbell, J.C., Cherlin, A., Hayat, M.J., Kub, J. & Wenzel, J. (November 2010). Couple Functioning and Posttraumatic Stress in OIF/OEF Veterans and Spouses. Poster presentation at the American Military Surgeons of the United States (AMSUS) conference, Phoenix, AZ. | 11 Jan 2011, TSNRP (COL DeJong) 30 Aug 2010, TSNRP (COL DeJong) |
| Media Reports | Photograph and story for release on news wires, Johns Hopkins and military media sources. TSNRP newsletter, Spring/Summer 2011 | 20 July 2011, TSNRP (CDR Maye) COL DeJong |

| Reportable Outcomes | |
|--|-----------------------------|
| Reportable Outcome | Detailed Description |
| Applied for Patent | None |
| Issued a Patent | None |
| Developed a cell line | None |
| Developed a tissue or serum repository | None |
| Developed a data registry | None |

Recruitment and Retention Table

| Recruitment and Retention Aspect | Number |
|--|---------------|
| Subjects Projected in Grant Application (as amended, January 2011) | 180-200 |
| Subjects Available | 764,816 |
| Subjects Contacted or Reached by Approved Recruitment Method | 210 |
| Subjects Screened | 210 |
| Subjects Ineligible | 26 |
| Subjects Refused | 0 |
| Human Subjects Consented | 184 |
| Subjects Who Withdrew (Did not mail surveys) | 38 |
| Subjects Who Completed Study | 146 |
| Subjects With Complete Data | 146 |
| Subjects with Incomplete Data (Non-respondents) | 38 |

Demographic Characteristics of the Sample

| Characteristic | |
|---------------------------------------|------------|
| Age (yrs) | 37.8 ± 9.1 |
| Women, n (%) | 73 (50%) |
| Race | |
| White, n (%) | 136 (88.9) |
| Black, n (%) | 9 (5.9) |
| Hispanic or Latino, n (%) | 7 (4.6) |
| Pacific Islander or Asian, n (%) | 2 (1.4) |
| Other, n (%) | 5 (3.6) |
| Military Service or Civilian | |
| Air Force or Navy, n (%) | 2 (1.4) |
| Army, n (%) | 107 (69.7) |
| Civilian, n (%) | 44 (28.7)* |
| Service Component | |
| Active Duty, n (%) | 46 (30.1) |
| Reserve, n (%) | 14 (9.0) |
| National Guard, n (%) | 10 (6.5) |
| Retired Military, n (%) | 11 (7.2) |
| Prior Military but not Retired, n (%) | 26 (17.0) |
| Military Dependent, n (%) | 44 (28.7)* |
| Civilian, n (%) | 44 (28.7)* |
| Education | |
| High school diploma | 55 (36.1) |
| 2 or 4 yr degree | 47 (30.7) |
| Graduate school or more | 51 (33.3) |
| Rank | |
| Civilian | 44 (30.1)* |
| Junior Enlisted | 28 (18.3) |
| Senior Enlisted | 34 (22.2) |
| Warrant officer | 4 (2.6) |
| Commissioned officer | 41 (26.8) |
| Parity | |
| No children | 21 (13.7) |
| 1 | 30 (19.5) |
| 2 | 68 (45.0) |
| 3 or more | 34 (22.2) |

Note. *Military dependent and civilian categories are measuring the same participants.

Final Budget Report

Rationale for reallocating funds:

Mailing costs were more expensive than expected, largely due to increased recruitment.

Rationale for remaining (unspent) funds:

Travel: I attended dissemination conferences that were less expensive than the ones I had originally proposed.

Other expenses (Education): I found a course in couple's theory within the Johns Hopkins University, so that the tuition proposed for a course at Catholic University was not needed.